REMARKS

INTRODUCTION:

In accordance with the foregoing, claim 10 has been canceled without prejudice or disclaimer, and claims 1 and 11 have been amended. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1-9 and 11 are pending and under consideration. Reconsideration is respectfully requested.

REJECTION UNDER 35 U.S.C. §102:

In the Office Action, at pages 3-5, claims 1, 3, 4, 5, and 7 were rejected under 35 U.S.C. §102(b) as being anticipated by Hollis et al. (USPN 5,653,939; hereafter, Hollis). This rejection is traversed and reconsideration is requested.

Claim 1 has been amended to include the features of claim 10 and to recite how the measuring apparatus operates. The amendment is based on the specification, page 13, line 9, through page 15, line 25. No new matter is added. Claim 10 has been cancelled without prejudice or disclaimer. Claim 11 has been amended to update antecedent basis.

It is respectfully submitted that, although the Examiner submits that Hollis teaches "a common electrode which is a counter electrode to said measuring electrodes arranged in the space part i.e., upper electrode 21 of Figure 4)," the upper electrode 21 of Hollis, as shown in Figure 3 of Hollis, constitutes a plurality of elongated shape electrodes. For example, see col. 5, lines 41-45:

> The precursor structure shown in the sectional view of FIG. 5A is next processed to form an upper and lower digitated electrode structure, a portion of which is shown in the cross-section IV--IV of FIG. 3, shown in detail in FIG. 4. (emphasis added)

Thus, it is submitted that Hollis does not disclose "a common electrode which is a counter electrode to said measuring electrodes" (emphasis added), as is recited in claim 1 of the present invention.

Hence, claim 1 is not anticipated under 35 U.S.C. §102(b) by Hollis et al. (USPN 5,653,939). Since claims 2-9 and 11 depend from claim 1, claims 2-9 and 11 are not anticipated under 35 U.S.C. §102(b) by Hollis et al. (USPN 5,653,939) for at least the reasons claim 1 is not anticipated under 35 U.S.C. §102(b) by Hollis et al. (USPN 5,653,939).

REJECTION UNDER 35 U.S.C. §103:

In the Office Action, at pages 6-10, claims 1-11 were rejected under 35 U.S.C. §103(a) as being unpatentable over Wilding et al. (USPN 5,587,128; hereafter, Wilding) in view of Hollis et al. (USPN 5,653,939; hereafter, Hollis). The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

Claim 1 has been amended to include the features of claim 10 and to recite how the measuring apparatus operates. The amendment is based on the specification, page 13, line 9, through page 15, line 25. No new matter is added. Claim 10 has been cancelled without prejudice or disclaimer. Claim 11 has been amended to update antecedent basis.

It is respectfully submitted that Wilding teaches a device for amplifying a polynucleotide in a sample by conducting a polynucleotide amplification reaction wherein, as recited in col. 21, lines 14-18 of Wilding: "The presence of amplified polynucleotide also may be detected by sensing the pressure or electrical conductivity of the fluid samples entering and exiting the flow system. The conductivity may be measured, e.g., using electrical contacts which extend through the substrate and which mate with electrical contacts in an appliance used in combination with the device." That is, the electrical conductivity or pressure of the sample is measured in Wilding to determine the presence of polynucleotide amplification. Wilding, col. 26, lines 7-13, recites:

> The pump in the appliance connected to port 16B is then used to direct the amplified polynucleotide isolated from the cell population to a detection region comprised of a bifurcating series of flow paths 40. Flow restriction in the detection region 40 serves as a positive indicator of the presence of amplified polynucleotide product and is detected optically through a glass cover disposed over the detection region" (emphasis added).

In contrast, for embodiments the present invention, line 9 of page 13 through line 12 of page 15 of the specification, recites:

> Hereafter, the detecting apparatus 1 for single base substitution SNP and point mutation of genes related to the present invention constituted as prescribed above is described. The detecting chip 2 is sealed between the body 4 and the upper cover which are combined. As shown FIG. 3, the injector 20 and 21 are inserted in the injection hole 18 and 19 to inject solution containing DNA samples. (emphasis added)
>
> Furthermore, as DNA samples, DNAS which are extracted from biomaterials and then cleaved by DNA lyase or by the supersonic treatment or DNAs from specific genes which are amplified by PCR (polymerase chain reaction) are used. The DNA samples are denatured by a heat treatment immediately before hybridization. (emphasis added)
>
> When DNA samples (single-stranded) are mixed to the immobilized PCR products or oligonucleotides (single-stranded), the hybridization is conducted between the PCR

products or oligonucleotides and DNA samples that have complementary base sequences to each other. At this moment, the detecting chip 2 is fixed by inserting it into the insertion slot 22 in the measuring apparatus to control the temperature by using peltier devices furnished in the measuring apparatus 3, so that the temperature condition during hybridization is controlled. (emphasis added)

After the hybridization, the detecting chip 2 is pulled out of the measuring apparatus 3, and DNA samples which did not hybridize are washed by injecting a washing solution from the injection hole 18 by the injector and then absorbing the solution within space part S from the other injection hole 19. (emphasis added)

After washing, electrolytic solution including electrochemically active molecules are injected into the space part S from the injection hole 18 and 19 by the injector. The electrochemically active molecules perform the function of changing electric characteristics such as the value of the resistance of double-stranded DNA by hybridization. This point is specifically described in the official gazette, Patent Laid-Open Publication Hei 9(1997)-288080. (emphasis added)

When the detecting chip 2 after the treatment described above is refixed to the measuring apparatus 3, and the terminal 17 for the common electrode and the terminal 12 for each of the gold electrodes are connected to the voltage circuit 23, and thereafter, weak voltage is applied between the common electrode 16 and each of the gold electrodes 8, a weak electric current flows between the double-stranded DNA generated by hybridization and the connected gold electrodes 8 through the voltage circuit 23 and the common electrode 16. Temperature is controlled by peltier devices furnished within the measuring apparatus 3 and current values in different temperatures are measured. (emphasis added)

As noted above, Hollis teaches a plurality of elongated shape electrodes.

Hence, even if combined, Hollis and Wilding do not teach or suggest amended claim 1 of the present invention.

Thus, it is respectfully submitted that amended claim 1 is patentable under 35 U.S.C. §103(a) over Wilding et al. (USPN 5,587,128) in view of Hollis et al. (USPN 5,653,939). Since claims 2-9 and 11 depend from amended claim 1, claims 2-9 and 11 are patentable under 35 U.S.C. §103(a) over Wilding et al. (USPN 5,587,128) in view of Hollis et al. (USPN 5,653,939) for at least the reasons amended claim 1 is patentable under 35 U.S.C. §103(a) over Wilding et al. (USPN 5,587,128) in view of Hollis et al. (USPN 5,653,939).

DOUBLE PATENTING:

In the Office Action, at pages 11-12, claims 1-6 and 8-11 were rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-5, 7, 11-

13 and 16-22 of Takenaka et al. (USPN 6,916,614; hereafter, Takenaka) in view of Wilding et al. (USPN 5,587,128; hereafter, Wilding).

Claim 1 has been amended to include the features of claim 10 and to recite how the measuring apparatus operates. The amendment is based on the specification, page 13, line 9, through page 15, line 25. No new matter is added. Claim 10 has been cancelled without prejudice or disclaimer. Claim 11 has been amended to update antecedent basis.

As noted above, amended claim 1 of the present invention is not taught or suggested by Wilding.

Takenaka discloses a gene detecting chip comprising: a body part having a plurality of pin electrodes on an inside surface thereof; a frame part having a recess on an inner surface thereof and being freely attachable to and detachable from said body part, said frame part being capable of accepting the pin electrodes and of being filled with a nucleic acid sample; and a common electrode being a counter electrode for the pin electrodes, wherein said common electrode is arranged within the recess in a manner that said common electrode does not come into contact with the pin electrodes (see claim 1 of Takenaka).

However, Takenaka does not disclose a chip that, when the chip is configured to be inserted into and removed from the measuring apparatus, and is configured to be electrically connected to said measuring apparatus to detect single base substitution SNP and point mutation of genes by detecting electric currents between said counter electrode and each of said plurality of measuring electrodes, wherein the single base substitution SNP and point mutation of genes is obtained by placing nucleic acid sequence samples or gene-amplified nucleic acid sequence samples in the space part to form double strands with a plurality of PCR products or oligonucleotides, placing an electrolyte including an electrochemically active molecule in the space part; controlling the temperature at which said double strands are formed, removing the chip from the measuring apparatus, washing, and injecting electrolytic solution including electrochemically active molecules into the space part, as is recited in amended claim 1 of the present invention.

Hence, even if combined, Takenaka and Wilding do not teach or suggest amended claim 1 of the present invention.

Hence, it is respectfully submitted that amended claim 1 of the present invention is patentable over claims 1-5, 7, 11-13 and 16-22 of Takenaka et al. (USPN 6,916,614) in view of Wilding et al. (USPN 5,587,128) with respect to the ground of non-statutory obviousness-type

double patenting. Since claims 2-6, 8-9 and 11 depend from amended claim 1, claims 2-6, 8-9 and 11 are submitted to be patentable over claims 1-5, 7, 11-13 and 16-22 of Takenaka et al. (USPN 6,916,614) in view of Wilding et al. (USPN 5,587,128) with respect to the ground of non-statutory obviousness-type double patenting for at least the reasons amended claim 1 is patentable over claims 1-5, 7, 11-13 and 16-22 of USPN 6,916,614 in view of Wilding et al. (USPN 5,587,128) with respect to the ground of non-statutory obviousness-type double patenting.

Hence, it is respectfully requested that the rejection of claims 1-6, 8-9 and 11 as being unpatentable over claims 1-5, 7, 11-13 and 16-22 of Takenaka et al. (USPN 6,916,614) in view of Wilding et al. (USPN 5,587,128) with respect to the ground of non-statutory obviousness-type double patenting be withdrawn.

CONCLUSION:

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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